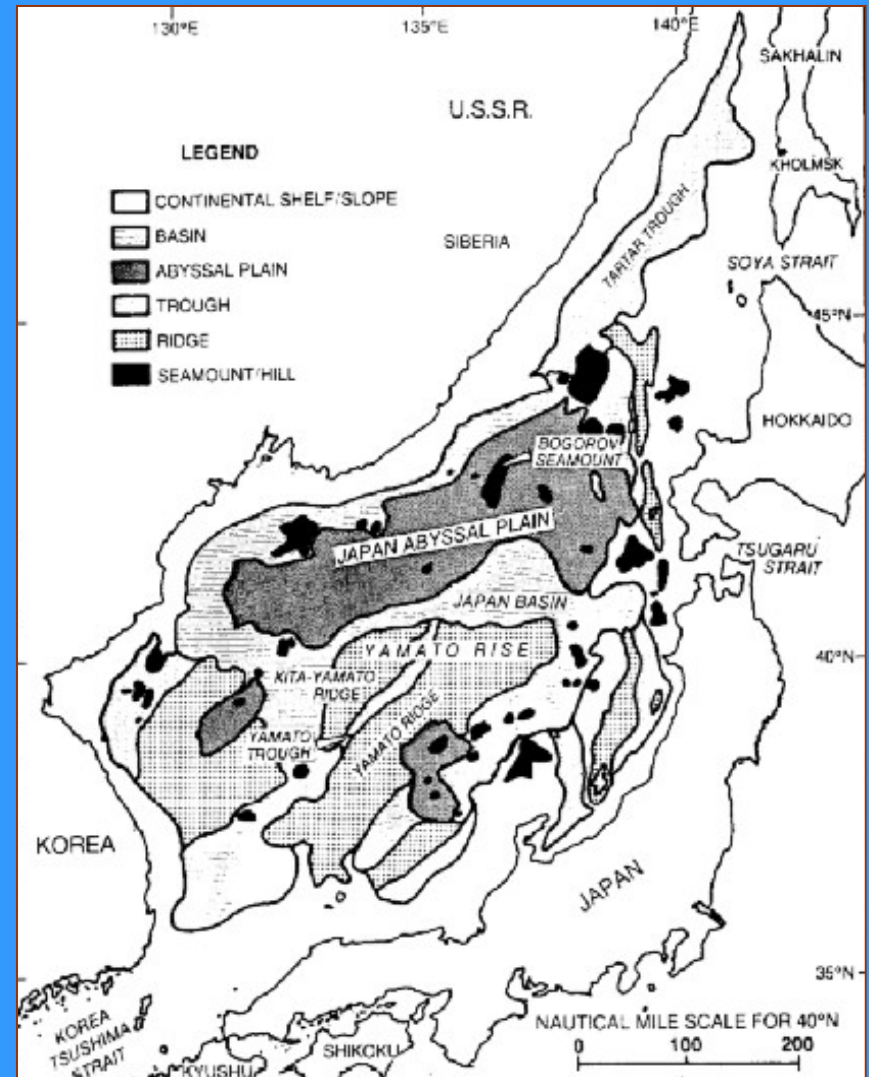
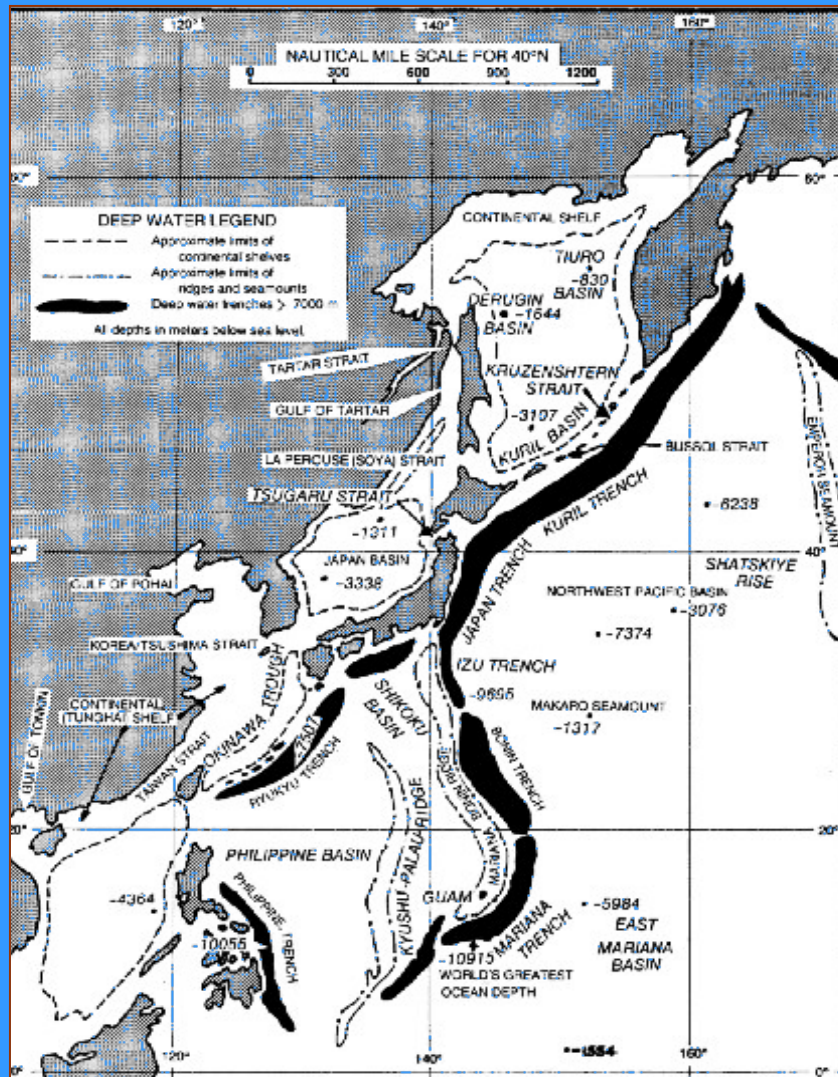


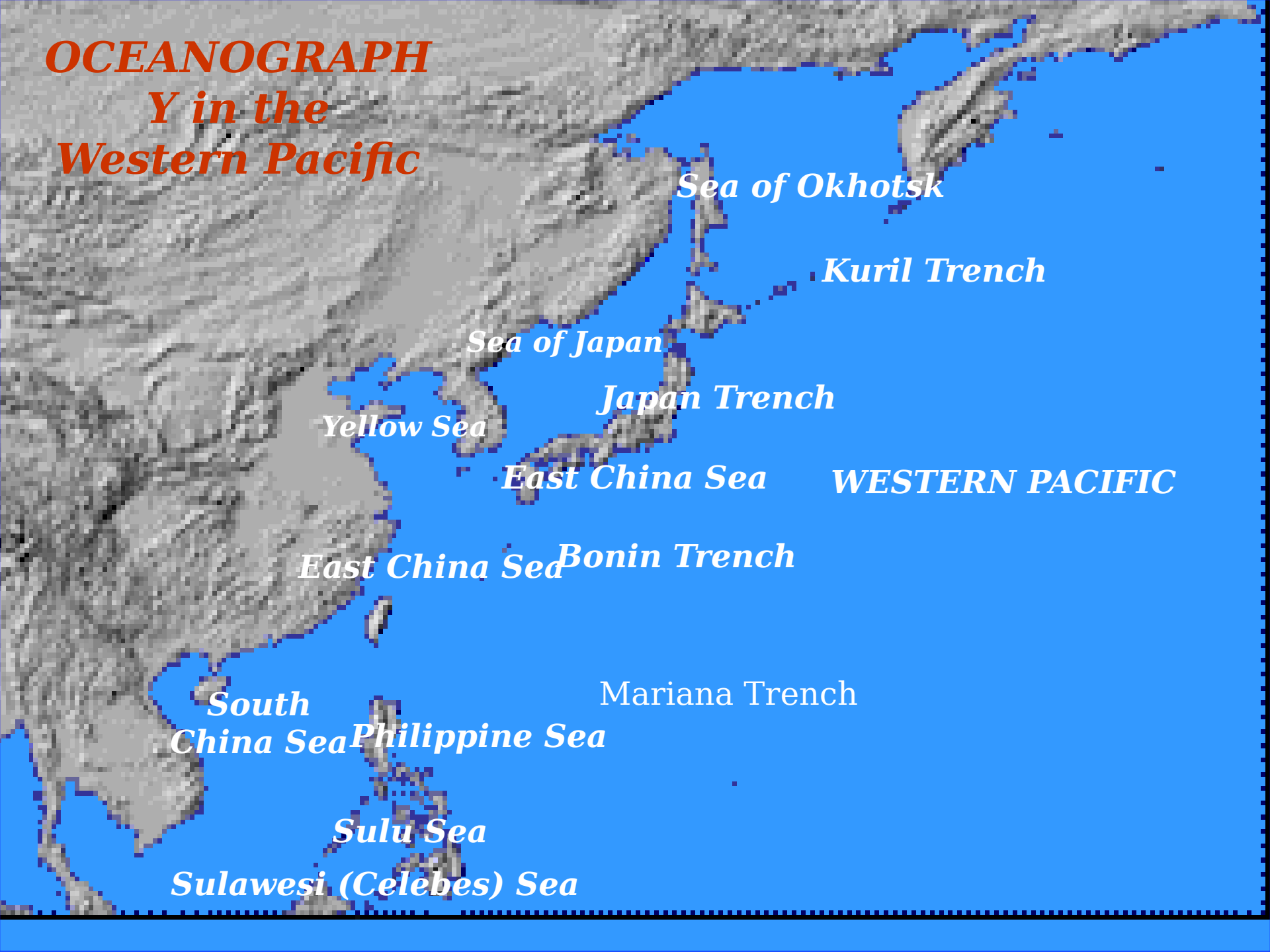
WESTERN PACIFIC OCEANOGRAPHY



References

- SEVENTH Fleet AOR Forecasters Handbook (02/98)
- <http://www7300.nrlssc.navy.mil>
- National Geographic Atlas of the World, Sixth edition
- www.yoko.npmoc.navy.mil
- <http://www-ocean.tamu.edu>

OCEANOGRAPHY Y in the Western Pacific



Sea of Okhotsk

Kuril Trench

Sea of Japan

Japan Trench

Yellow Sea

East China Sea

WESTERN PACIFIC

East China Sea

Bonin Trench

Mariana Trench

*South
China Sea*

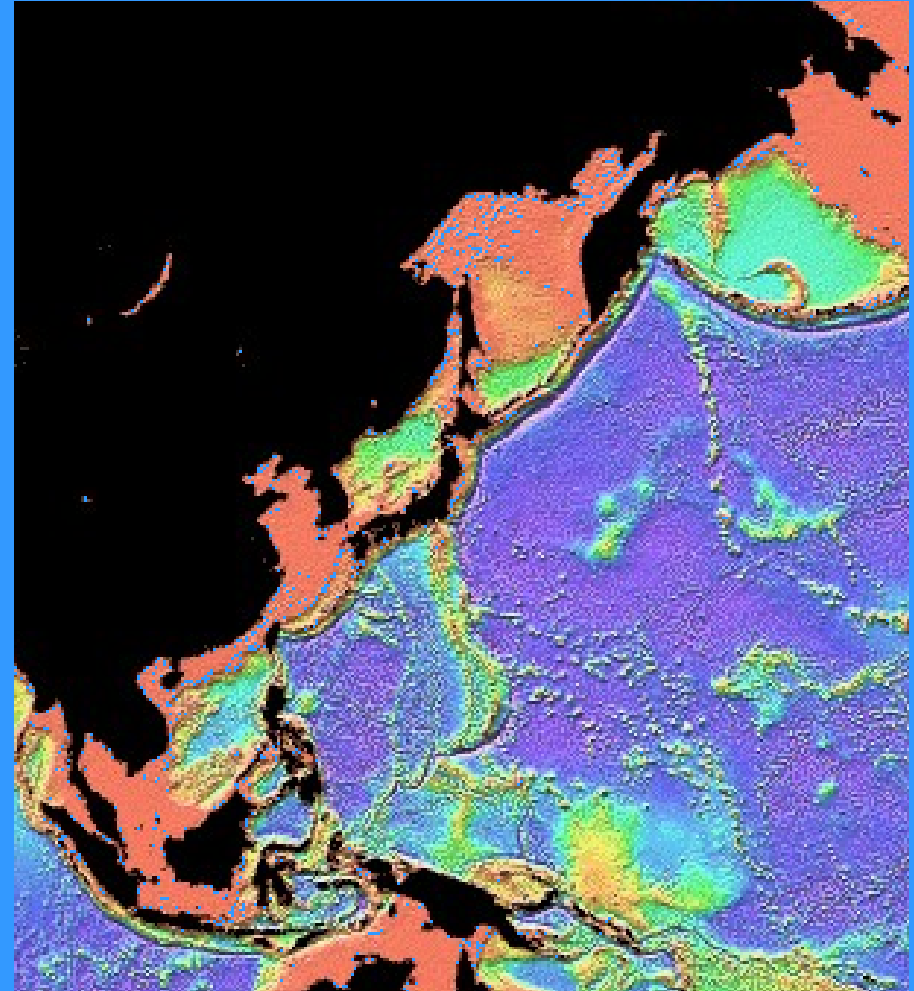
Philippine Sea

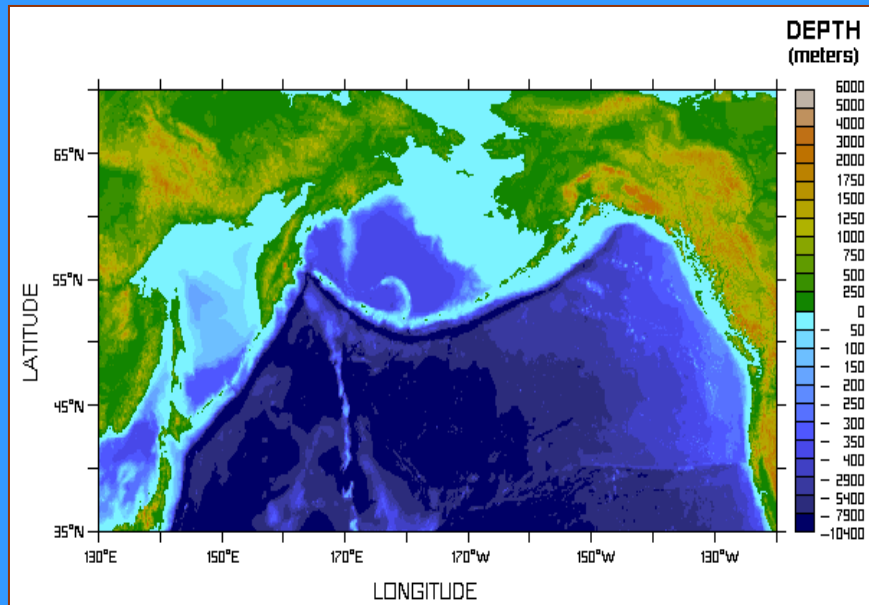
Sulu Sea

Sulawesi (Celebes) Sea

Oceanography

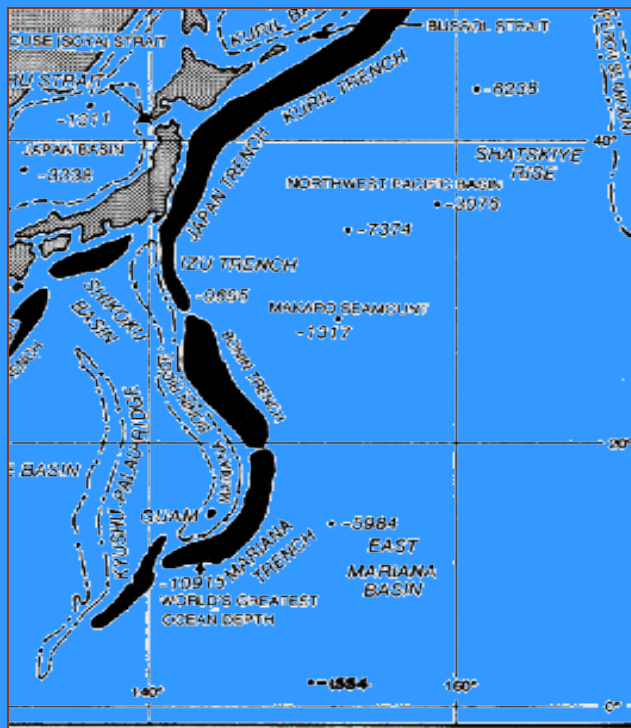
- Ocean regions of the Western Pacific include marginal and deep ocean areas
- Major contrasts in physical properties exist over these ocean regimes
- The impact is significant to temperature, salinity and bottom characteristics





Western Pacific

- The majority of ocean is open with deep basins, and trenches
- A characteristic of the Pacific basin is the semi-continuous belt of extensive trenches

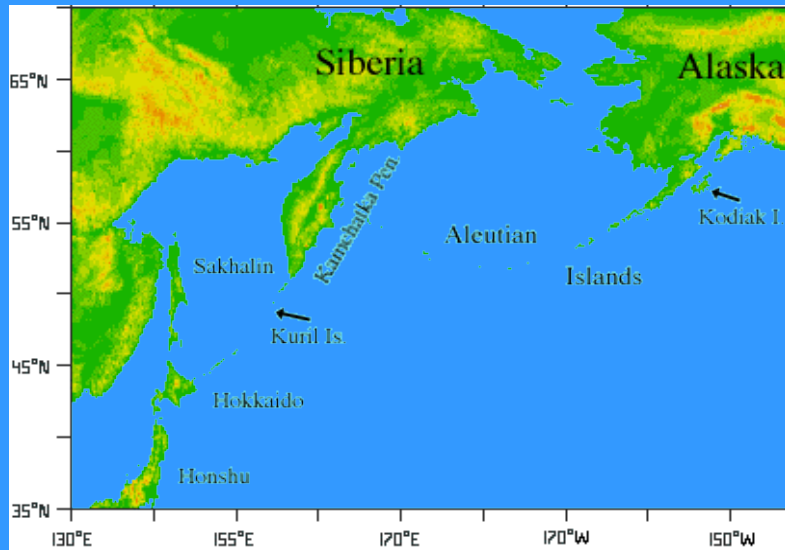


Basic Definitions

- Continental shelf - < 120 meters deep, a slope of 1/10 of 1 degree or less.
- Shelf break - The junction between continental shelf and the continental slope.
- Continental slope - slope of 3 to 6 degrees, is cut by submarine canyons.
- Abyssal plains - Average water depths of 3000 m nearly flat featureless plains created by sediment from turbidity currents.
- Deep ocean trenches - The deepest parts of the ocean up to 11,000 meters deep. Mariana Trench is 36,000 feet deep. This is deeper than Mt. Everest is high.
- Sea mounts - The most common feature on the ocean floor. These are volcanoes that rise hundreds of meters above the sea floor. Flat topped volcanoes are called guyots. Atolls sometimes form on these sea mounts.
- Mid-ocean ridge - The longest mountain range in the world, rift zone - active volcanoes.

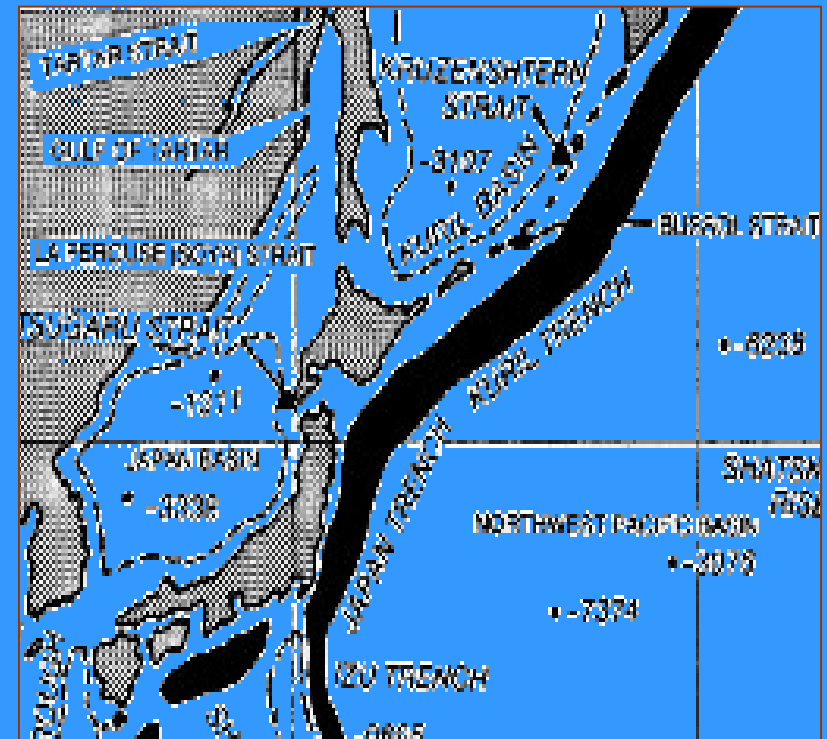
Major Advances in the Exploration of the Ocean Basins

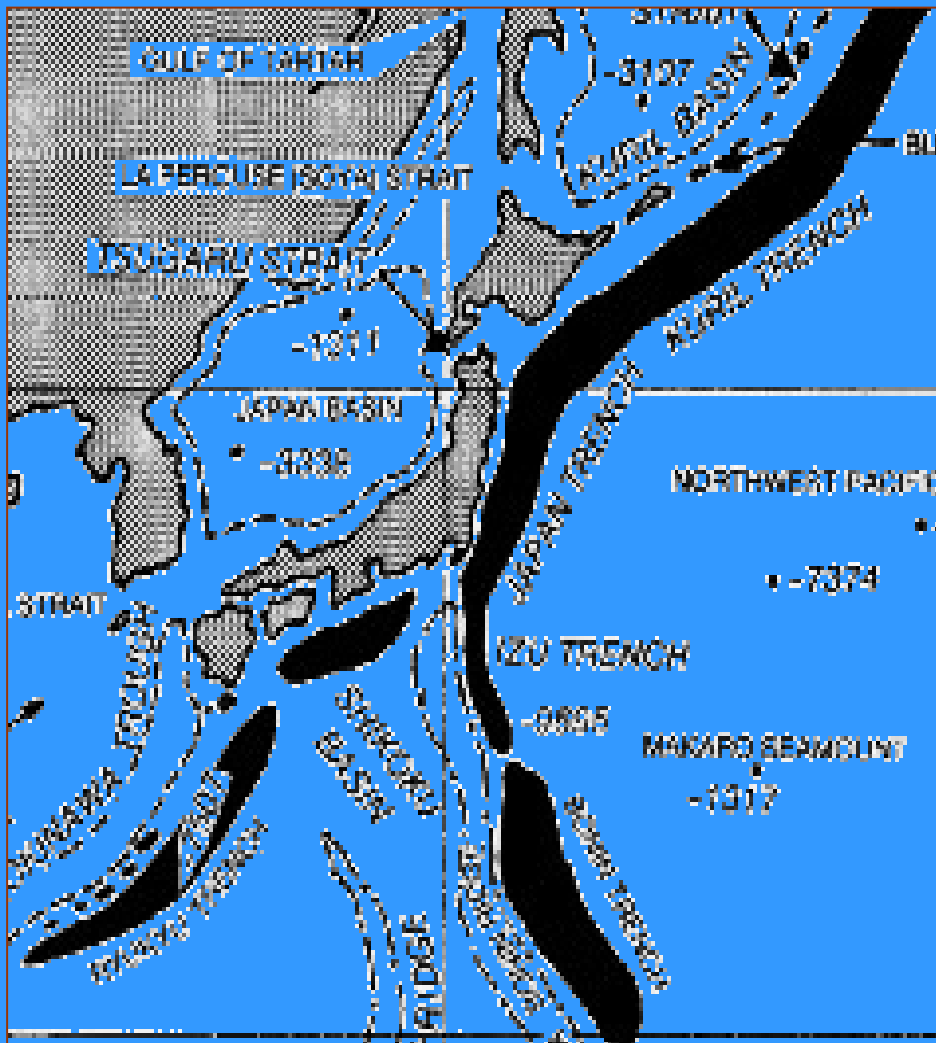
- Challenger Voyage - Captain James Cook 1872-1876, some of the first soundings of the oceans.
- WWII - submarine warfare, development of echo sounding - sound travels at about 1500 m/s in water.
- Post WWII - nuclear submarines detailed mapping of the ocean floor. Oil exploration in continental shelf areas.
- Deep ocean drilling - 1960s to present



Kuril Trench

- 27,880 ft (8,503 m)
- Parallels the Kuril Island chain
- Maximum depths between Hokkaido and central Kuril islands



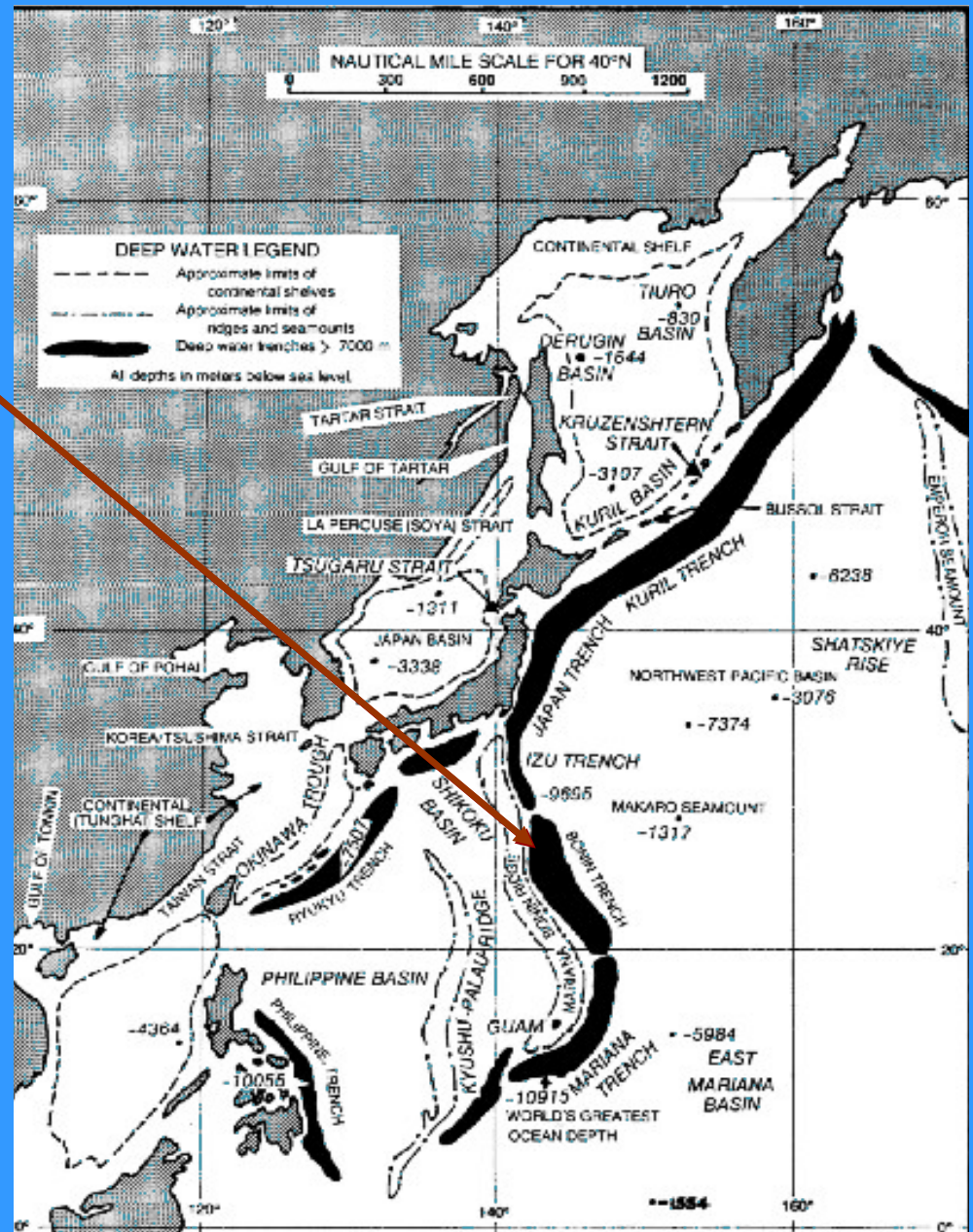


Japan Trench

- 35,440 ft (10,809 m)
- Located east of Northern Honshu, then south to approximately 30° N

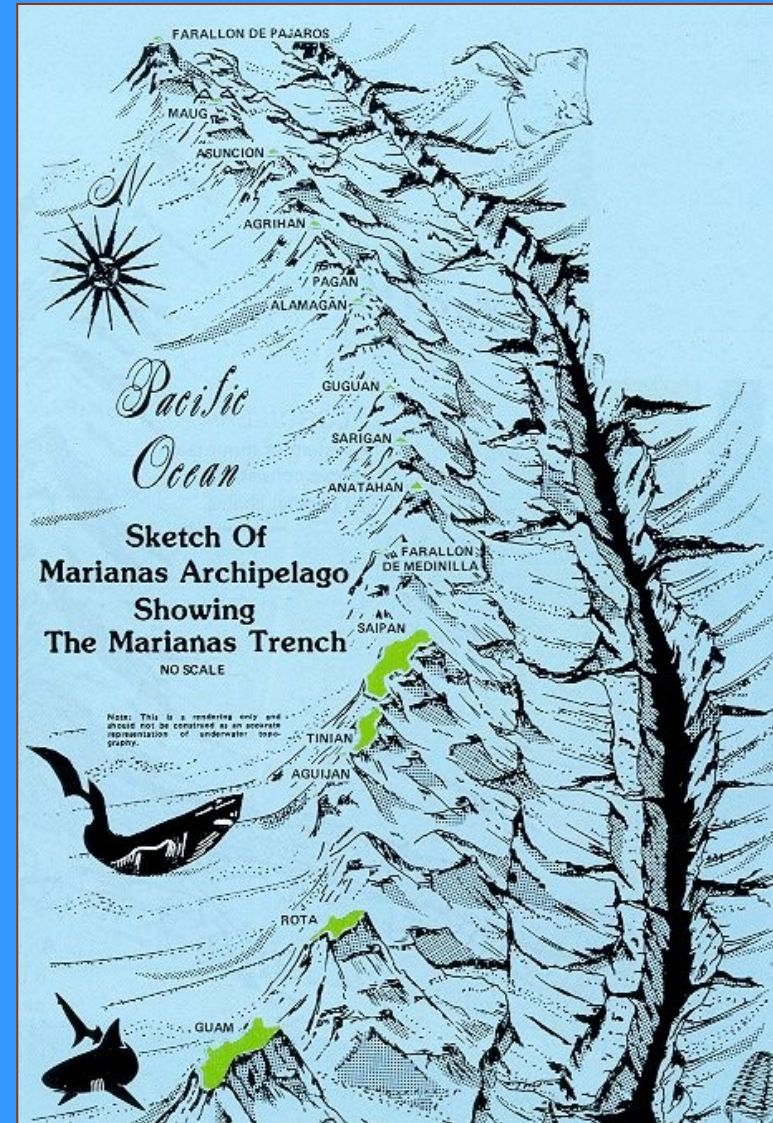
Bonin Trench

- 28,405 ft
(8,664 m)
- Eastern edge
of Bonin Island



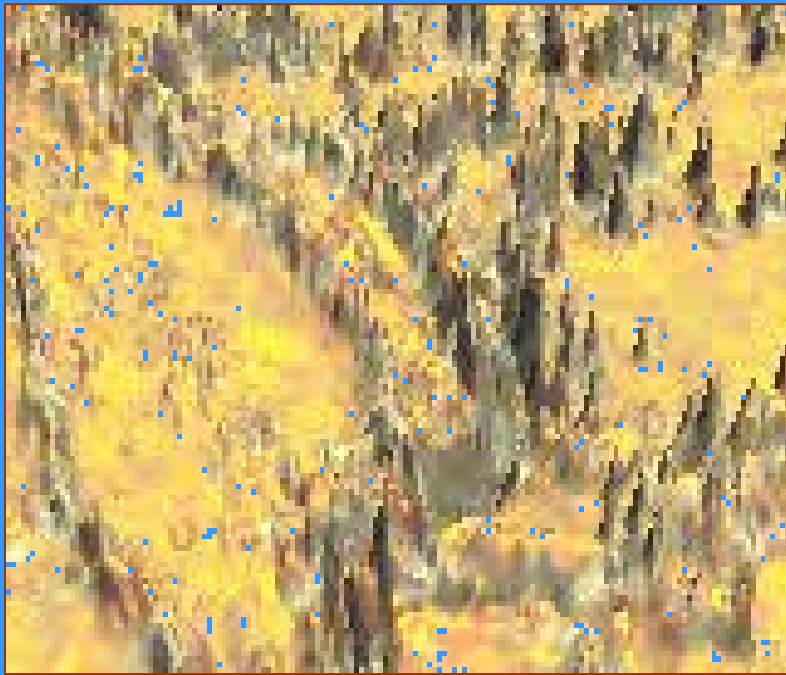
Mariana Trench

- "Grand Canyon of the Pacific." The Marianas Trench is the world's greatest ocean depth
- The island of Saipan rises more than 36,000 ft above the floor of the trench.
- On the floor of the trench the water pressure is more than 7 tons per square inch
- The islands rise out of the sea in successive level terraces indicative of repeated volcanic elevations
- Several volcanoes in the northern islands are active. While earthquakes occur in the Marianas, the vast majority are registered only as seismograph and not felt by the inhabitants

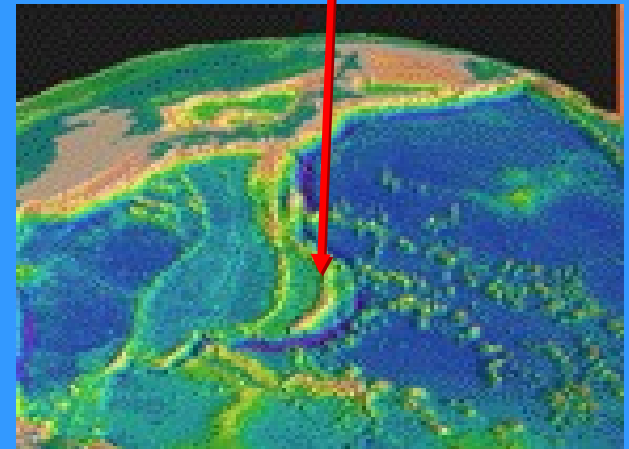


Mariana Trench

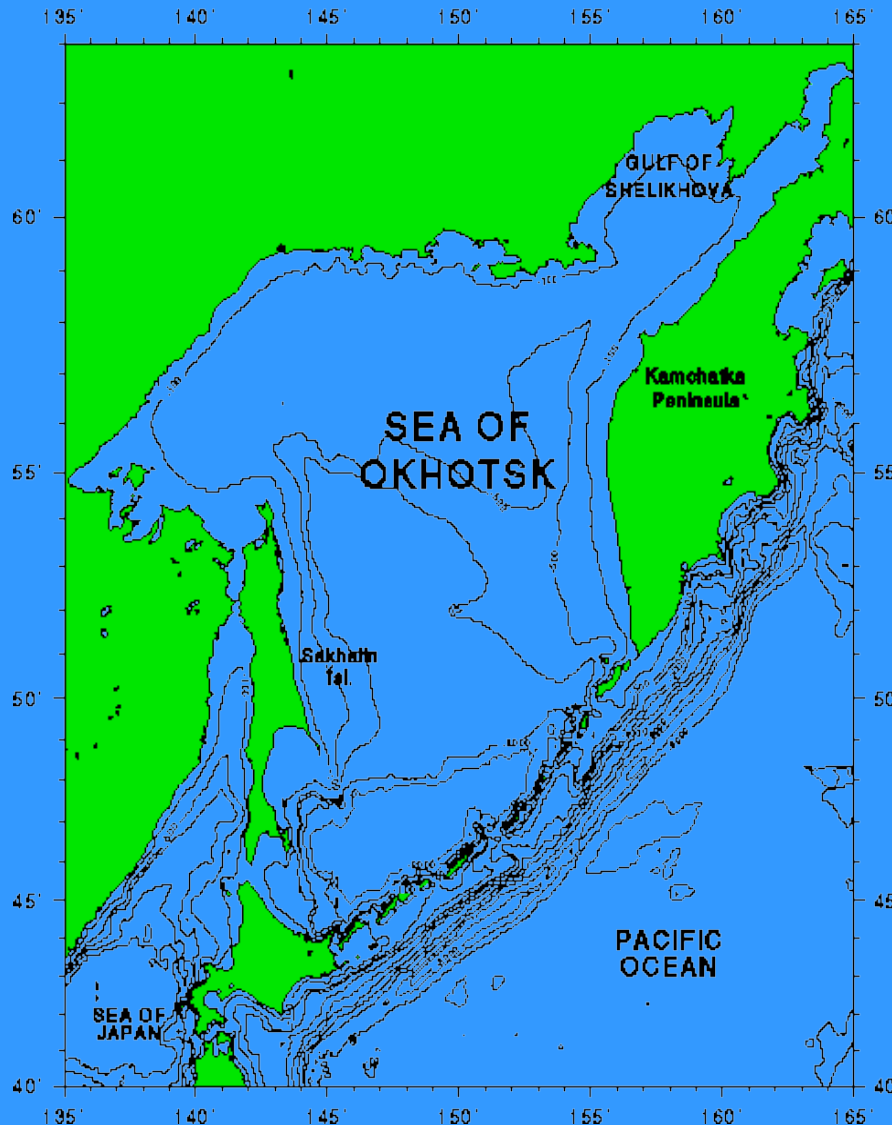
- The Challenger Deep 35,800 ft (10,919 m) is the deepest trench on earth



Mariana Trench Fly-by
(click on image to stop/start)

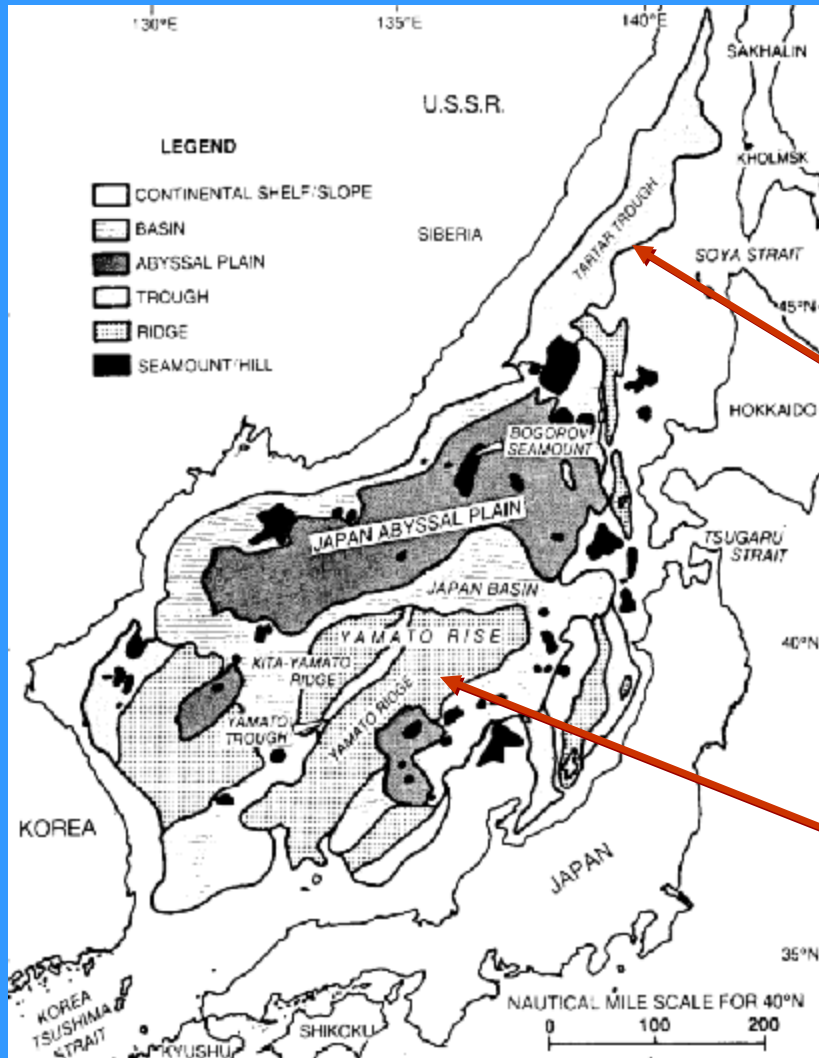


Sea of Okhotsk



- A marginal sea separated from the Pacific by Kuril Islands and Kamchatka
- Kuril Straits connect the Sea of Okhotsk with the Pacific and the Tartar and Soya Straits with the Sea of Japan
- The continental shelf accounts for 40% of the entire sea
- Bottom composition is mainly sand and silt
- Near shore summits and slopes of marine rises in mainly gravel and sand

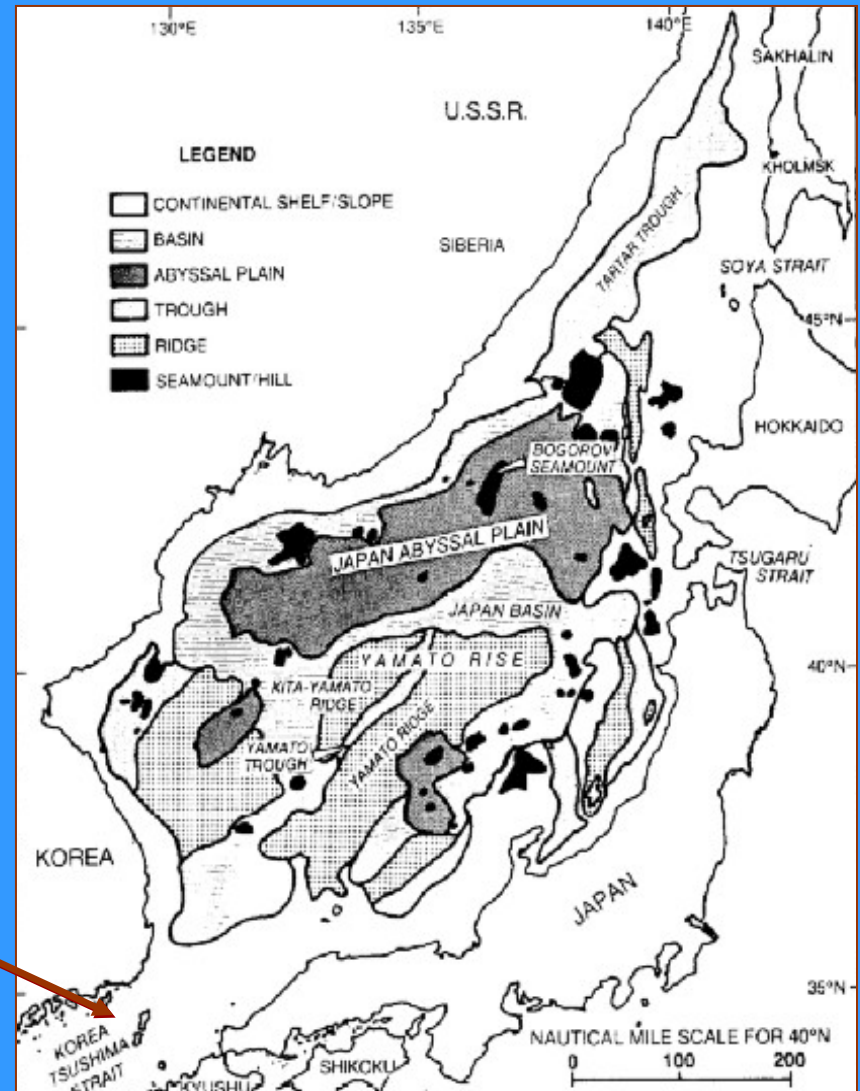
Sea of Japan



- Central portion is dominated by the Japan basin and Japan Abyssal Plain
- Tartar trough extends south from Siberia and Sakhalin Island to the Japan Basin
- Yamato Rise is the most significant topographical feature

Sea of Japan

- Most of the continental shelf is very narrow except near extreme north Hokkaido and Sakhalin Island
- Another major feature is Tsushima Island in the middle of the Tsushima and Korea Straits; which consist of a flat bottom
- Tsushima island is a continuation of the continental shelf of the East China Sea



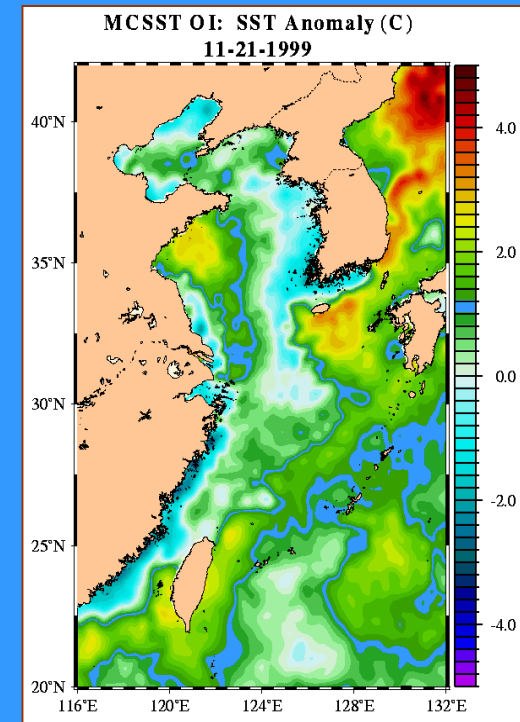
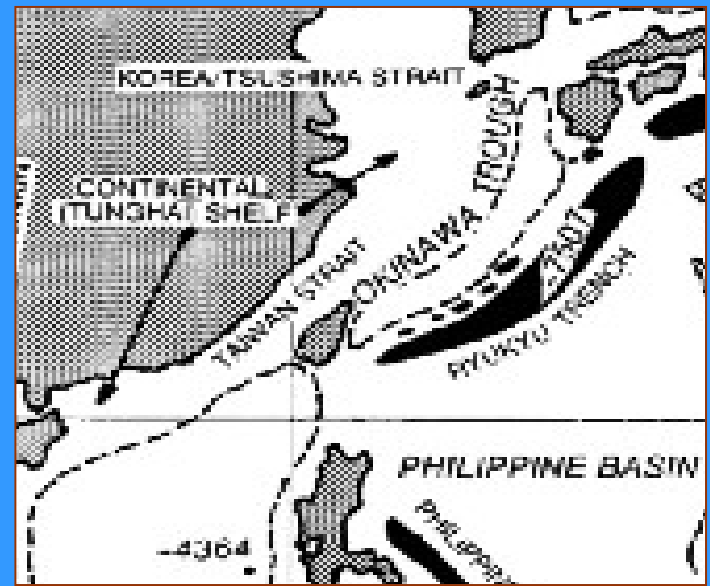
Yellow Sea



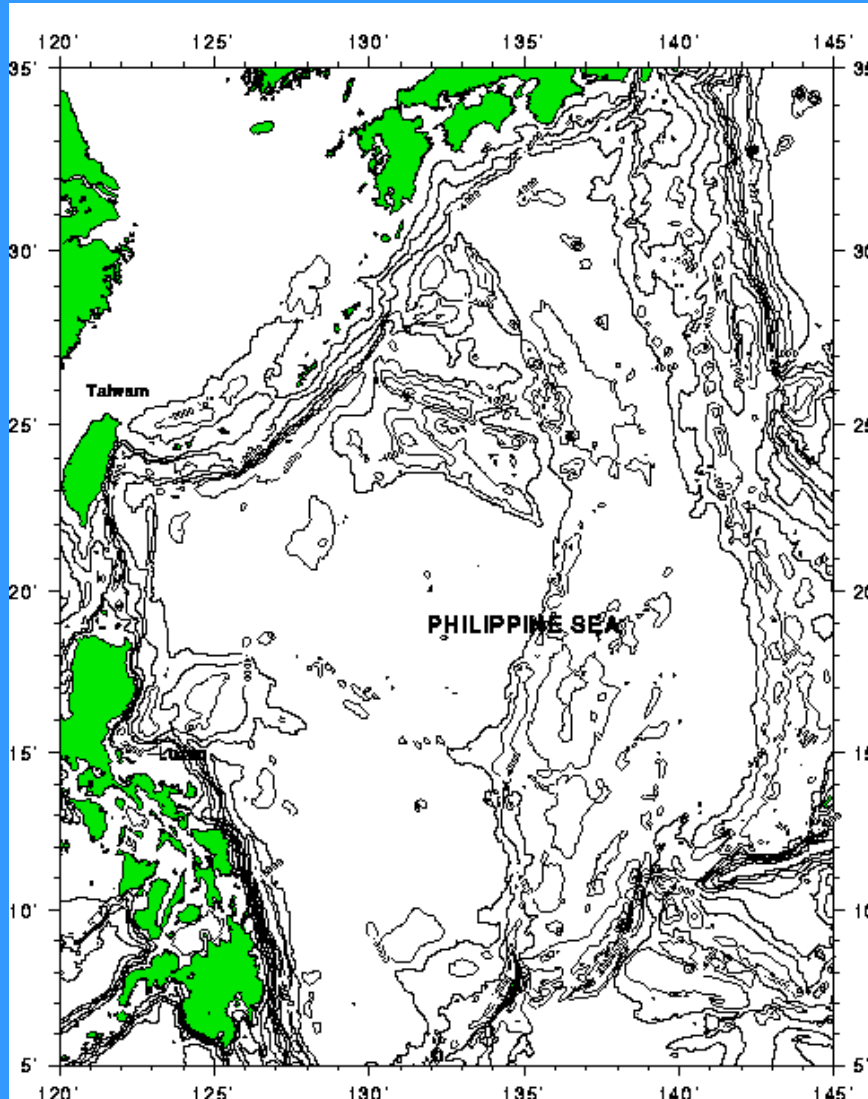
- Consists of three segments
- Gulf of Pohai to the northwest, Korea Bay to the northeast and the Yellow Sea
- An enclosed, wide, flat, shallow marine embayment
- Depths vary from 197-252 ft (60-77 m)
- Strong tidal currents and numerous rivers are common with a bottom of muddy silt

East China Sea

- Two distinct areas are the continental shelf which makes up shallow water and the Okinawa Trough which is deep water
- The shelf is a narrow 170 nm (274 km) near Taiwan to 450 nm (725 km) near 33°N
- Bottom is mainly mud near shore with sand at the outer shelf
- The Okinawa Trough borders the continental shelf. It extends from Taiwan to Kyushu along the inner Ryukyu Island arc



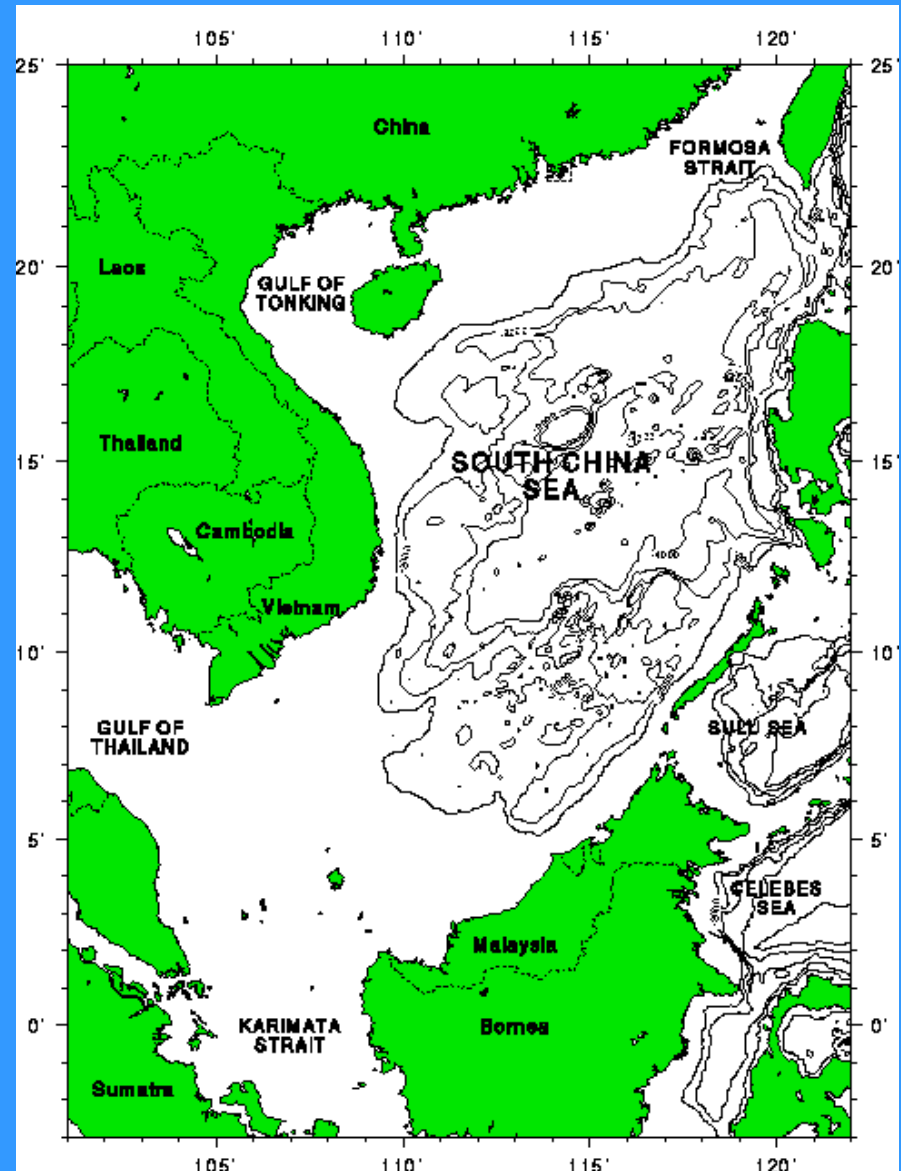
Philippine Sea



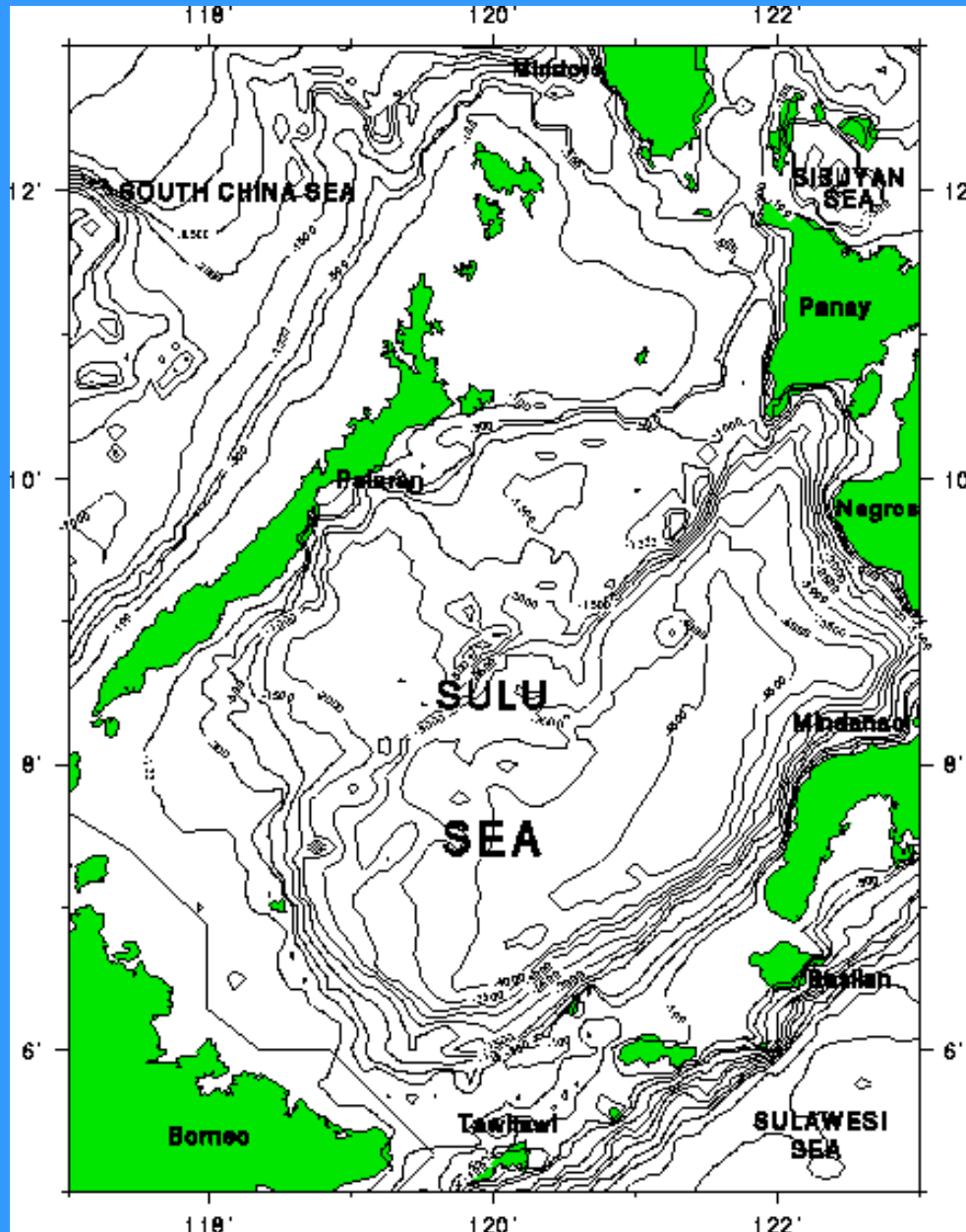
- Defined by the Philippine Islands, Mariana Islands on the east, Japanese Islands to the north, Taiwan to the west
- An abyssal zone with depths greater than 6,500 ft (2,000 m)
- Topography consists of trenches over 19,600 ft (5,978 m), belts of seamounts and deep basins
- Bottom sediment is red clay and oozes of volcanic materials along arcs

- China Sea Basin, in the north central portion, dominates the South China Sea
- Maximum depth is 17,400 ft (5,307 m)
- The central SCS is an abyssal plain
- Large reef-studded shoal areas occur in the basin in the southern area
- Mud and sediment dominate the bottom near coastal areas along the shelf
- Clay is the main sedimentary feature in the deepest basin areas

South China Sea



Sulu Sea

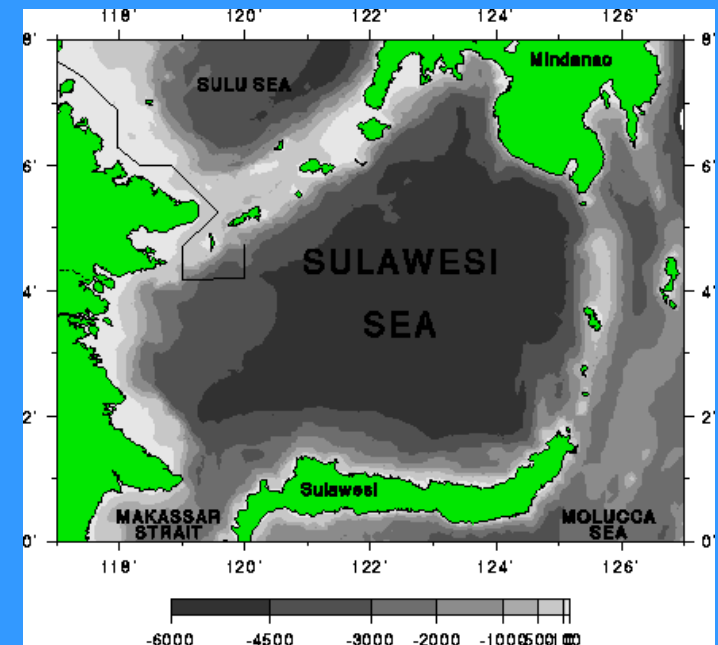
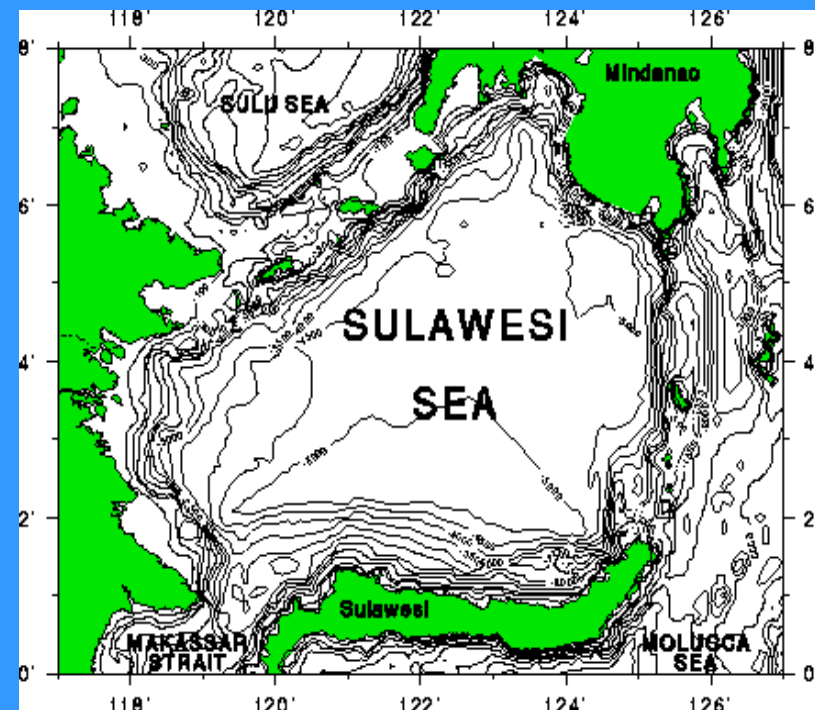


- Bounded on the south by Borneo, to the west-northwest by Palawan Island, to the north the Philippine Islands and southeast the Sulu Archipelago
- The sea is divided by a row of banks (depths less than 650 ft/198 m) which run parallel to Palawan Island

Sulawesi (Celebes)

Sea

- Located between Borneo and the southern Philippines with the Sulu Archipelago and southwest Mindanao to the north
- The north opening of the Makassar Strait is located southwest and connects the Sulawesi Sea to the Flores Sea
- The Sulawesi Basin is uniform in depth and flat
- Volcanic mud is the rule for bottom composition



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South China Sea Philippine Sea

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Sulawesi (Celebes) Sea

Questions?

